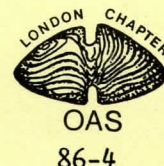




April, 1986

NEWSLETTER OF THE LONDON CHAPTER,
ONTARIO ARCHAEOLOGICAL SOCIETY



Our first presentation of the spring will be provided by the director of our host institution for monthly meetings - Dr. William D. Finlayson. Dr. Finlayson will be discussing the

1985 Salvage Excavations at the Keffer Site - An Update

Meeting time is 8:00 P.M. on Thursday, April 10. Come out and learn the results of the Oneida piscine procurement project. Just ask the big Indian!

Chapter Executive

President

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20 Picton Street, London

Vice-President

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EXECUTIVE REPORT

The business of running our Chapter continues to simmer as our active executive met once again on March 27. Linda announced that Dr. Finlayson would be addressing the Chapter's April general meeting and that Carl Murphy had agreed to present our May talk. Neal reported that several Chapter members had been nominated to receive Volunteer Service Awards from the Ministry. Bob Calvert, Jim Keron and Charles Nixon will be presented with silver 10 year pins, while Mike and Linda Gibbs and Bob Mayer will receive 5 year awards. Many other Chapter members have contributed substantially over the years; however, we were allowed only five nominations (and got six accepted!). Even Toronto noticed our outstanding membership, and nominated George Connoy for a much deserved 10 year pin!

Neal also announced that the Chapter had received two anonymous donations of \$100.00 each, as well as operating monies for the Oneida project. The latter is now well under way, with Oneida staff involved in both archaeological analysis and archival research.

The Chapter volume entitled **Studies in Southwestern Ontario Archaeology** is now at the printer and the executive is hoping to have it ready for sale at the upcoming C.A.A. annual meeting in Toronto. Finally, our President has written Don Brown in Toronto to express dismay at the lack of communication and support (including financial) which exists between the main body and chapters. Our executive hopes that their communication will generate not only a formal response, but also lead to the development of a province-wide perspective and commitment on the part of the Society executive.

Public Advisory Committee

The London Chapter's Public Advisory Committee (Mike Gibbs, Paul Antone and Bob Mayer) formed a delegation at the April 1 public participation meeting of the City of London's Planning Committee. The purpose of the meeting was to add a Heritage Resources Chapter to the Official Plan. After a careful review of the draft document and a preliminary meeting with L.A.C.A.C. members and staff from the Planning Department, the delegation decided to support the amendment in principal, Mike Gibbs prepared and read the following statement for the public record:

The London Chapter of the Ontario Archaeological Society would like to thank L.A.C.A.C., its ex-Chairman Mr. Ted Halwa and its Chairman Mr. Bill Hitchins for the opportunity to review this Heritage Amendment and to commend them on the hard work and diligence that went into the preparation of this document. We would also like to thank the Planning Department for their efforts to dispell any misgivings and/or misconceptions our committee had about the proposed amendment.

The proposed amendment's intent to protect Heritage Resources is important not only to the residents of London but to the peoples of Ontario as well. Integration into the Official Plan of this amendment is a positive step toward public and corporate awareness of a mutual responsibility

to pass on a clear record of past achievements for future generations.

It is the London Chapter's intention to encourage and facilitate your efforts while continuing its own efforts on behalf of the archaeological community. We would ask that L.A.C.A.C., the Planning Committee and the Planning Department recommend an archaeological representative or representatives be appointed by City Council to L.A.C.A.C. to reflect the Heritage concerns of the archaeological community.

Following an hour-long question and answer period (which was scheduled to last only 15 minutes), a motion was passed to table the discussion of the Proposed Amendment until the May 26, 1986, Planning Committee meeting. Considerable debate was generated on whether the City would be obligated to perform certain tasks (i.e. preparing and maintaining a heritage site inventory) for which there are no financial resources available.

Even though the wording was 'exceptionally permissive' and 'extremely generalized', it was the opinion of Aldermen J. Fontana, J. Irvine and D. Jorgenson that they needed more time to review the ramifications in greater detail.

In the interim, the Public Advisory Committee will meet with L.A.C.A.C. in order to continue dialogue on preparing an archaeological site inventory in conjunction with their historical and architectural building inventories (submitted by R. Mayer).

SOCIAL REPORT

Thursday, April 3 marked our final lab nite of the season. As our jovial host brought out the Ansari site collection for its final appearance (or was it?), one of our regulars noted that it was reported to have been completed months ago and another commented that the collection had very nearly resulted in a volunteer revolt the previous year! Certainly, its presentation dulled even Jeff Bursey's interest in lithic studies. Attendants were warmly thanked for their labours throughout the winter, and a special flintknapping workshop is to be set up for those regular Thursday nite volunteers who are still interested in lithic technology. Our technical session adjourned to Peachy's for the usual summary and closing remarks.

Members are reminded of the upcoming Canadian Archaeological Association Annual meeting which will be held at the Westbury Hotel in Toronto between April 24 and Sunday, April 27. As Neal says, a "plethora" of Chapter members will be presenting papers in a wide range of sessions. Some members are even chairing sessions.

London Chapter Wins Award

The London Chapter's 12th Annual Ontario Archaeological Society Symposium Committee has received a National Parks Centennial Award. This award was

presented "in grateful recognition of the special contribution made... ..to the celebration of the National Parks Centennial" during 1985. The certificate is signed by the Honourable Tom McMillan, Minister of the Environment. Congratulations are extended to Rob Pihl (Symposium Chairman), Linda Gibbs (Entertainment and Accomodations Chairwoman), George Connoy (Financial Chairman), Dave Smith (committee member), Bob Mayer (Publicity Chairman), and Charles Garrad (executive resource person).

The continued success of the 12th Annual Symposium would not have been possible without the dedicated administrative efforts of Christine Dodd, the organizational framework and timetable developed by Jim Keron, and the facilities and expertise of the Ministry of Citizenship and Culture provided by Bill Fox (submitted by R. Mayer).

WANTED

ARCHAEOLOGICAL FIELD PARTY

What To excavate totally a 2-acre St. Lawrence Iroquois village site - the McKeown Site

Where Near Prescott in eastern Ontario

When From Monday 12 May 1986 to Friday 30 August. You report to a rendezous Sunday 11 May ready for work on Monday 12 May.

Positions Available

Chief Cataloguer	\$11.00/hour - one required
Cataloguer	\$6.00/hour - one required
Field Supervisor	\$10.00/hour - two required
Excavation, Record,	
Flotation crew	\$5.00/hour - eight required

Applicants for these positions must have at least one seasons field experience, preferably on Iroquois sites. Cataloguers must have one year catalogueing experience.

Data Processor \$9.00/hour - one required

Applicant must be able to use fully IBM - PC micro computer and DBASE II.

Working Hours Work will be scheduled for 44 hours a week on a five day week.

Pay Pay scale shown is before Income Tax deduction. I will pay UIC, CPP and Vacation Pay statutory deductions.

Apply Now Send your CV not later than 15 April 1986 to:
James F. Pendergast
P.O. Box 314
Merrickville, Ontario K0G 1N0

Important 1. References to confirm previous archaeological field experience must be submitted

2. Applications will be considered in the order they are received
3. Be prepared to camp-out on or near the site. Tents, cooking utensils and cutlery will be provided. You provide bedding and food. You cook for yourself.

Subject to receipt of Federal SSHRRC and Ontario CFIP grant funds (submitted by J. Pendergast).

KEWA is proud to present the following (unsolicited!) paper which was forwarded by Bud Parker of Trent University. As you will read, he was involved in a very interesting field research project last summer, which will form the basis of an M.A. thesis this year.

HALDIMAND CHERT: A PREFERRED RAW MATERIAL IN SOUTHWESTERN ONTARIO DURING THE EARLY HOLOCENE PERIOD

L.R. Bud Parker

Introduction

Over the last two decades, researchers studying the earliest prehistoric (fluted point) cultures in Southern Ontario have observed an interesting fact. As suggested by Meltzer (1985: 14) fluted point groups relied heavily upon one primary chert source for their lithic needs in the glaciated regions of the Northeast. This is supported by archaeologists studying the early Paleo-Indian complexes of Southern Ontario (Ellis and Deller 1982; Ellis 1984: 344-350; Roosa and Deller 1982; Voss 1977: 255; Stewart 1984: 50; and Storck 1984: 13).

Observations made during the summer of 1985, while conducting research in the region of Haldimand in Southern Ontario, have led to the hypothesis that chert source preference continued into the Late Paleo-Indian and Early Archaic periods (10,500 to 7,500 B.P.). This was a selective process on the part of the early Holocene complexes in the area and it implies that "Haldimand" chert was a preferred lithic raw material for three millennia in Southwestern Ontario. With proper petrological identification in the field this specific chert becomes a 'diagnostic' indicator of certain early cultures in the area (Ellis and Deller 1982: 7).

The Early Archaic period has been difficult to study in the Northeast, because of the belief that the area was inhospitable, environmentally, to large human populations between the end of the Paleo-Indian and the peak of the Archaic periods (Ritchie 1965, 1971; Fitting 1968). However, recent evidence has pointed to new theories of Early Holocene human settlement in this changing environment (Wright 1978). Haldimand chert was exploited during a period when both cultural and environmental transitions were occurring simultaneously.

Haldimand Chert

Haldimand chert is a carbonate-rich, siliceous, crypto-crystalline lithic material found in the Bois Blanc formation of Southern Ontario (see Figures 1 and 2). According to Blatt, Middleton and Murray (1980) this type of chert is of the "nodular form". Nodular chert forms flattened, discontinuous nodules within the bedding planes of the parent carbonate sedimentary rock (usually limestone) (Blatt et al. 1980: 575). Haldimand chert varies considerably in lustre, and in colour it ranges from white, light gray, blue-gray to pink.

The Bois Blanc formation was formed during the Lower Devonian period over 350 million years ago (Fox 1978: 6; Telford and Tarrant 1975). This formation rests upon the Onondaga Escarpment in the county of Haldimand, north of Lake Erie. The chert itself can be observed as discontinuous beds, or as nodules, in the bedrock sections of the many quarries between Cayuga and Hagersville, Ontario. Haldimand chert occurs in the uppermost portions of the Bois Blanc formation, and can reach thicknesses of 70 millimetres or more (Fox 1978: 6).

Today, this chert is easily obtainable at the sources indicated in Figure 2 in both primary and secondary contexts as defined by Luedtke (1979: 745). The Onondaga Escarpment is only exposed sporadically, between Fort Erie and Hagersville, Ontario (Chapman and Putnam 1973: 12). This north-facing scarp was eroded considerably by the last great glacial events 13,000 years ago, therefore the maximum height of the rock face, 15 meters, is markedly less than it once was (Chapman and Putnam 1973: 12; Telford and Tarrant 1975). This glacial abrasion exposed the resistant chert outcrops of the Bois Blanc formation to the elements so that erosion has carried many chert deposits downslope from the Escarpment face.

Archaeological Occurrences of Haldimand Chert

Haldimand chert occurs on several sites within the region of the chert sources themselves, and also outside this area to the east and west up to 200 kilometres away (see Figure 3). In the area close to the sources this chert was used throughout prehistory, but outside this region Haldimand chert is represented by several distinctive Early Holocene diagnostic point types. The most significant of these types is known as Hi-Lo (Fitting 1963) a lanceolate form dated between 10,200 and 9,600 B.P. (Ellis and Deller 1982: 17). The Hi-Lo complex has been labelled a Dalton variant in the Lower Great Lakes area (Ellis and Deller 1982: 16) thereby placing it within Tuck's first Early Archaic horizon (Tuck 1974). Other Early Archaic point types such as Kirk corner notched (Chapman 1976, 1977, 1980; Coe 1964), and Bifurcate points (Chapman 1975; Broyles 1971) have also been found made of Haldimand chert.

County of Haldimand

The county of Haldimand has seen limited archaeological activity in the past. Stothers' survey up the Grand River in the 1970's concerned itself with the early Late Woodland period's ceramic motifs and settlement patterns, not lithic source identification (Stothers 1977). And the paper by Wright (1978) placed several important Early and Middle Archaic finds within Haldimand, but failed to identify their lithic sources.

FIG.1: LOCATION OF THE BOIS BLANC FORMATION
IN SOUTHERN ONTARIO.

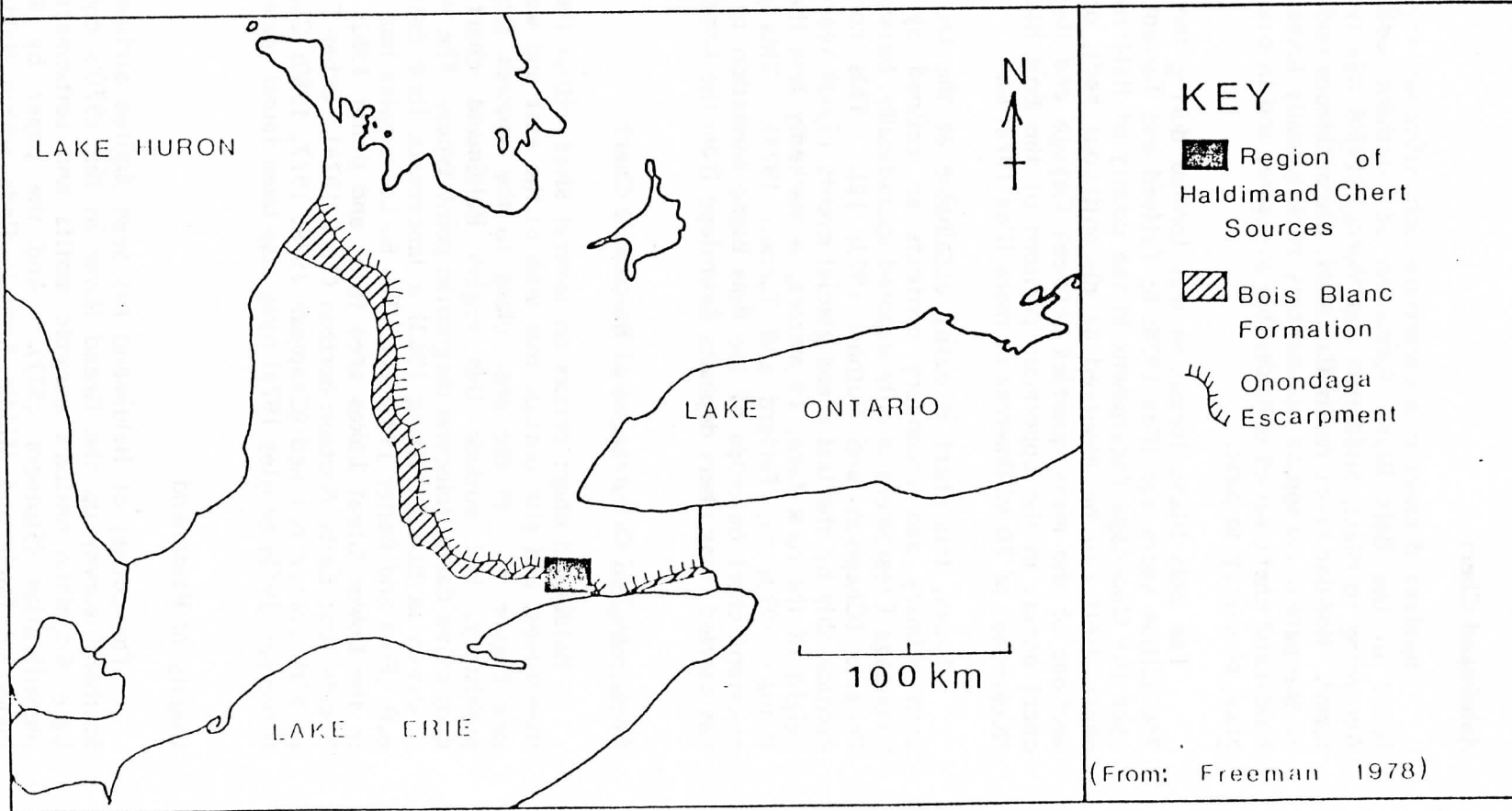


Figure 2: Location of Haldimand Chert Sources, the Allan Site (AfGx-50) and Their Geological Proveniences.

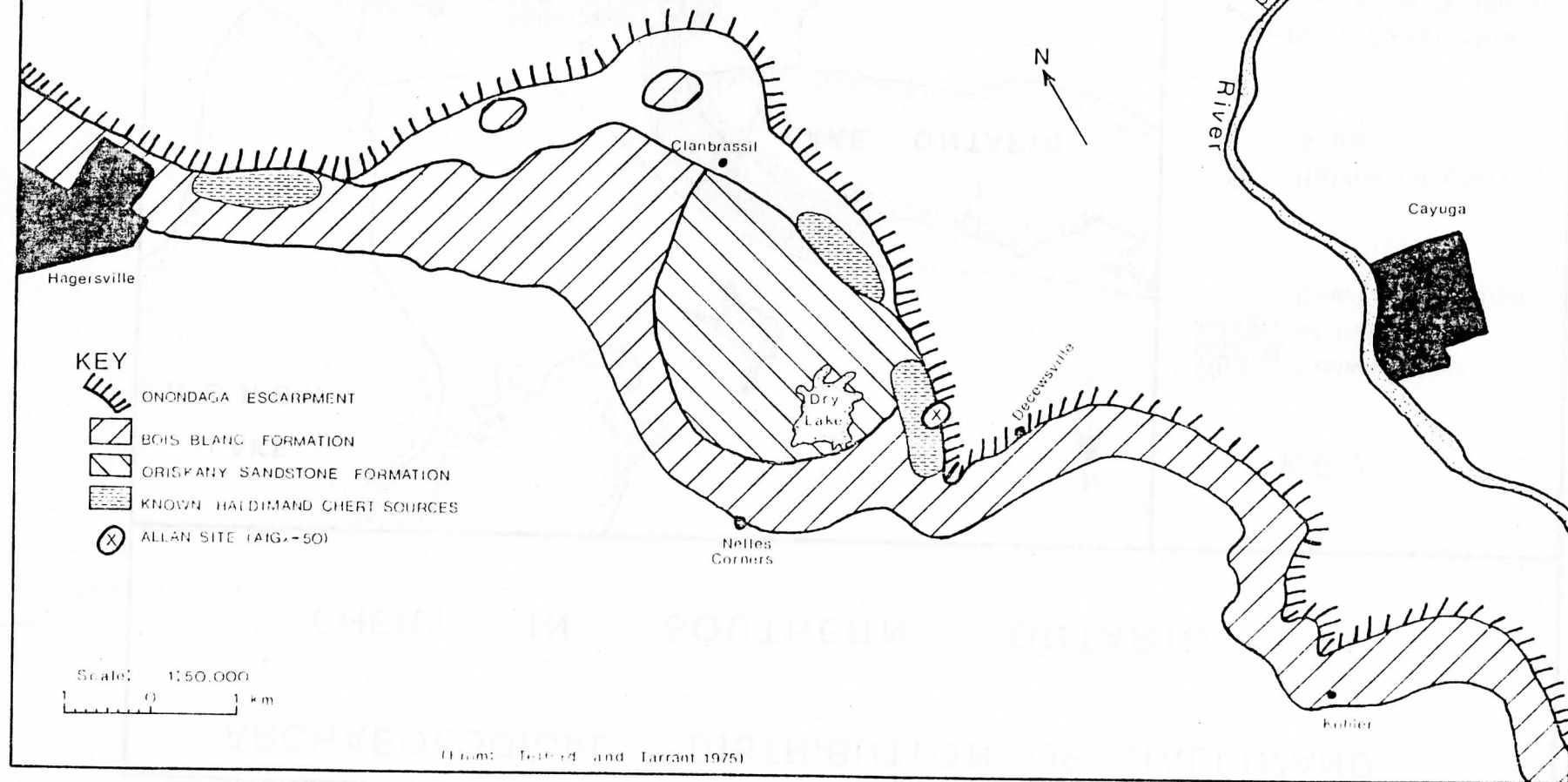
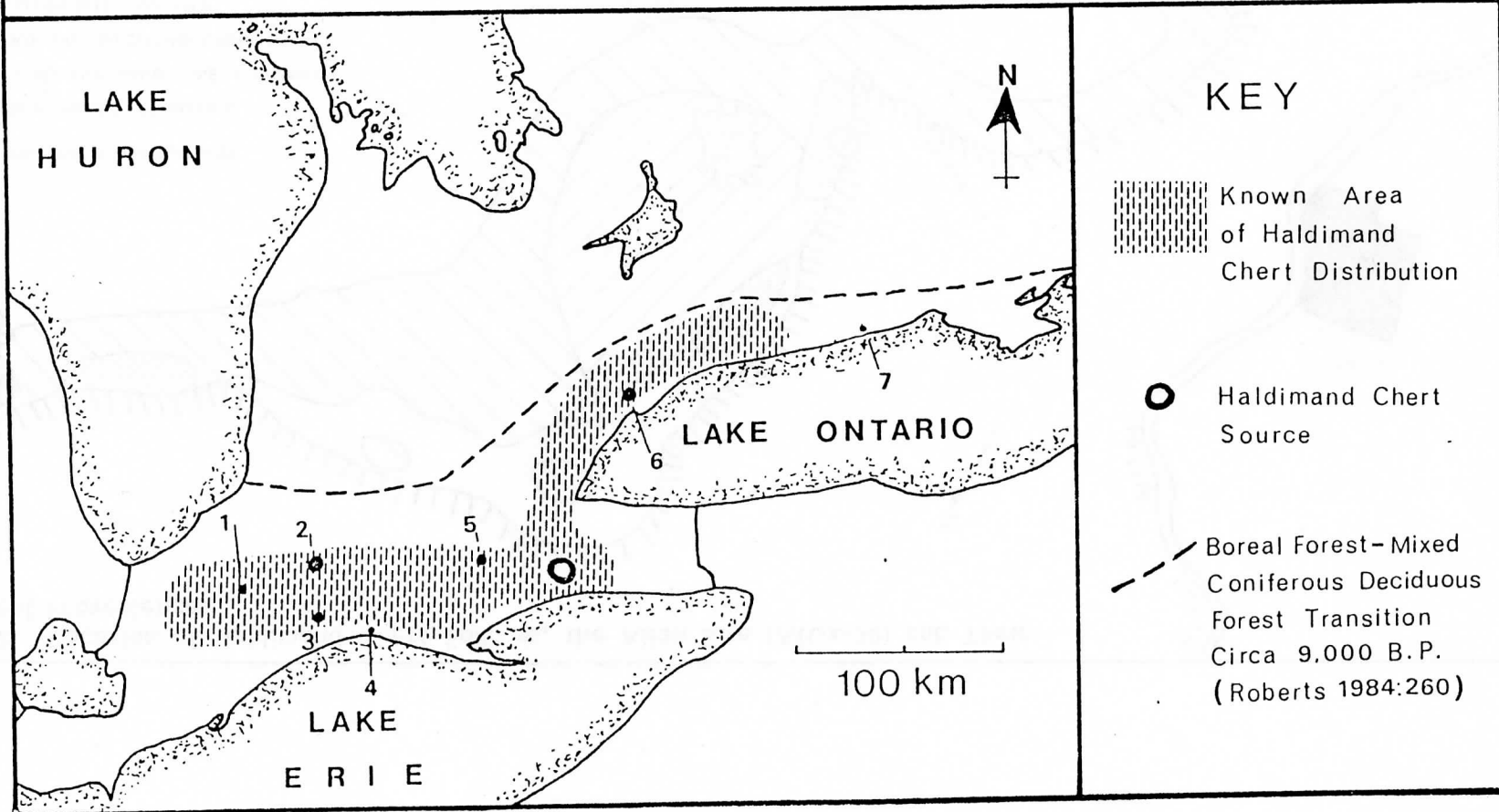


Figure 3: Archaeological Distribution of Haldimand Chert in Southern Ontario. The dotted line also corresponds to today's Carolinian-Canadian forest transition. Places and sites mentioned in the text: 1) Welke-Tonkonoh Site, 2) London, 3) St. Thomas, 4) Nettling Site, 5) Brantford, 6) Mississauga, and 7) Port Hope.

ARCHAEOLOGICAL DISTRIBUTION OF HALDIMAND CHERT IN SOUTHERN ONTARIO



Recent survey reports by Moerschfelder (1981, 1982, 1985) provide this study with positive evidence of chert source identification for collected diagnostic artifacts from the county of Haldimand. In these surveys a total of 265 diagnostic artifacts were collected, and 14.7% are of Haldimand chert. This small percentage is still significant when one considers that the southern portion of Haldimand county, south of the Onondaga Escarpment, contains hundreds of rich Onondaga chert sources (Moerschfelder 1981, 1982; Parkins 1977). Haldimand chert artifacts were found throughout the region and, surprisingly, almost 75% of these are from the Middle Archaic period or earlier (Moerschfelder 1981, 1982, 1985).

In an attempt to discover the original sources of Haldimand chert Mr. Moerschfelder (1985) was discouraged to find most of the Onondaga Escarpment destroyed by modern quarrying activities between Cayuga and Hagersville (1985: 5). However, tantalizing chert workshop sites below the Escarpment kept him interested in the project. These workshop sites consisted almost entirely of Haldimand chert debitage, but they generally lacked diagnostic artifacts (Moerschfelder 1985: 7). However, perseverance finally led to the discovery of undisturbed outcrops of Haldimand chert on top of the glacially-scarred Escarpment face during the winter of 1983 (Moerschfelder 1985: 8). In addition, two significant artifacts were found on two workshop sites; a Hi-Lo lanceolate (Fitting 1963; Ellis and Deller 1982), and a small bifurcate point (Broyles 1971; Chapman 1975) both made of Haldimand chert (Moerschfelder 1985: 14).

The Haldimand chert sources were exploited more during the Early Holocene period than afterward. This theory is supported by ongoing research within Haldimand county, for example, two large Late Woodland sites near a Haldimand chert source have tool assemblages consisting almost entirely of Onondaga chert (Moerschfelder 1985: 7).

Haldimand Chert Outside the Source Area

In the recent past, researchers in Southwestern Ontario have been finding Paleo-Indian sites along the strandlines of former glacial lakes (Storck 1984; Deller 1976, 1979). In these surveys other early remains have been discovered such as Hi-Lo, Plano, and Early Archaic style points (Deller 1976, 1979). It is interesting that Deller (1976, 1979) has found several Hi-Lo points in Middlesex and Lambton counties made of Haldimand chert (Ellis pers. comm.).

One of the most impressive of these finds are the Stewart, Welke-Tonkonoh, and other Hi-Lo sites in western Middlesex county (Ellis and Deller 1982). Analysis of the distinctive Hi-Lo points on these sites indicates that Haldimand chert was very important. Almost 40% of the 102 points are made of this material (Ellis and Deller 1982: 7). And at "Grid C", a pure Hi-Lo component at Welke-Tonkonoh, most of the lithics are of Haldimand chert. Several other tools from the remainder of this site are also made of this chert type (Ellis pers. comm.). These high percentages of Haldimand chert some 180 kilometres from their source are extremely interesting.

In the other direction, east of Haldimand county, on the north shore of Lake Ontario, Haldimand chert artifacts have also been found (Roberts 1980, 1982). Most of these tools are diagnostic Hi-Lo points (Roberts 1980: 32) which have been found as far east as Port Hope, Ontario (Ellis pers. comm.). This material in the east is again almost 200 kilometres from the Haldimand chert sources.

Ongoing research in Southwestern Ontario continues to indicate that outside the source areas Haldimand chert appears only on Early Holocene sites. Near St. Thomas, Ontario, over one hundred kilometres from the source area, Mr. George Connoy reports finding Hi-Lo points made of several types of chert, including Haldimand. Mr. Connoy, an amateur archaeologist, has also found a Plano lanceolate of Haldimand chert near London, Ontario (G. Connoy pers. comm.)

From Brantford, Ontario, Mrs. Ilse Kraemer has compiled an impressive artifact collection which comes from an area covering most of the region of Mississauga at the northwestern corner of Lake Ontario, and a broad sweep of territory in and around Brantford itself. In her collections a sample of sixty-one Early Holocene points were tallied. Of these, twenty-seven or 44.2% are made of Haldimand chert.

With further research this trend of Haldimand chert preference during the Early Holocene will undoubtedly continue.

The Allan Site (AfGx-50)

The Allan site is located in a small woodlot approximately five kilometres west of Cayuga, Ontario in the county of Haldimand (see Figures 1 and 2). The site is situated on a small clay knoll of the Pleistocene formation known as the Haldimand Clay Plain (Chapman and Putnam 1973). This location places the site immediately below the Onondaga Escarpment, just east of a large Haldimand chert source. To the south of the site a small spring-fed pond forms one of the many sources of Roger's Creek, which flows to the east into the Grand River north of Cayuga.

Initial archaeological surveys of the area began in the early 1980's, under the direction of Mr. Fred Moerschfelder (1981, 1982, 1985) a local amateur archaeologist who recorded the significant Haldimand chert sources and related workshop sites in Haldimand. In the vicinity of the Allan site Haldimand chert cobbles were found in abundance below the eroded Escarpment face as well as on top of the Bois Blanc exposures in the local rock quarry. The site itself was discovered beneath the forest litter in the form of overlapping debitage clusters. These clusters contain the usual assortment of workshop-related production debris, and occasional rejected tool forms. The Allan site may be one of the sources for the Haldimand chert seen archaeologically throughout Southwestern Ontario, and it may also provide insights into why this material was preferred over others in the Early Holocene period.

During the late spring and early summer of 1985 an archaeological investigation was conducted at the Allan site, and 42 square metres were excavated. A grid of two-metre squares oriented towards magnetic north was placed over the site. Each square was referred to by the intersection co-ordinates of north-south and east-west baselines at its southwestern corner. The excavation units were placed in the midst of seven debitage clusters, in two areas ten metres apart (see Figure 4). All lithic materials on the surface within these units were mapped using triangulation, then catalogued. Excavation was carried out by trowelling five centimetre levels into buckets whose contents were screened through 1/4" mesh. All lithics were collected from these levels, and co-ordinates were recorded for all materials at the interfaces between levels, as well as for all recognizable tools from within the levels. At the ten centimetre level hard clay subsoil was encountered, and excavation ceased at this point, although in some cases debitage clusters were found to continue deeper and were excavated where possible. All tree roots over one centimetre in diameter were

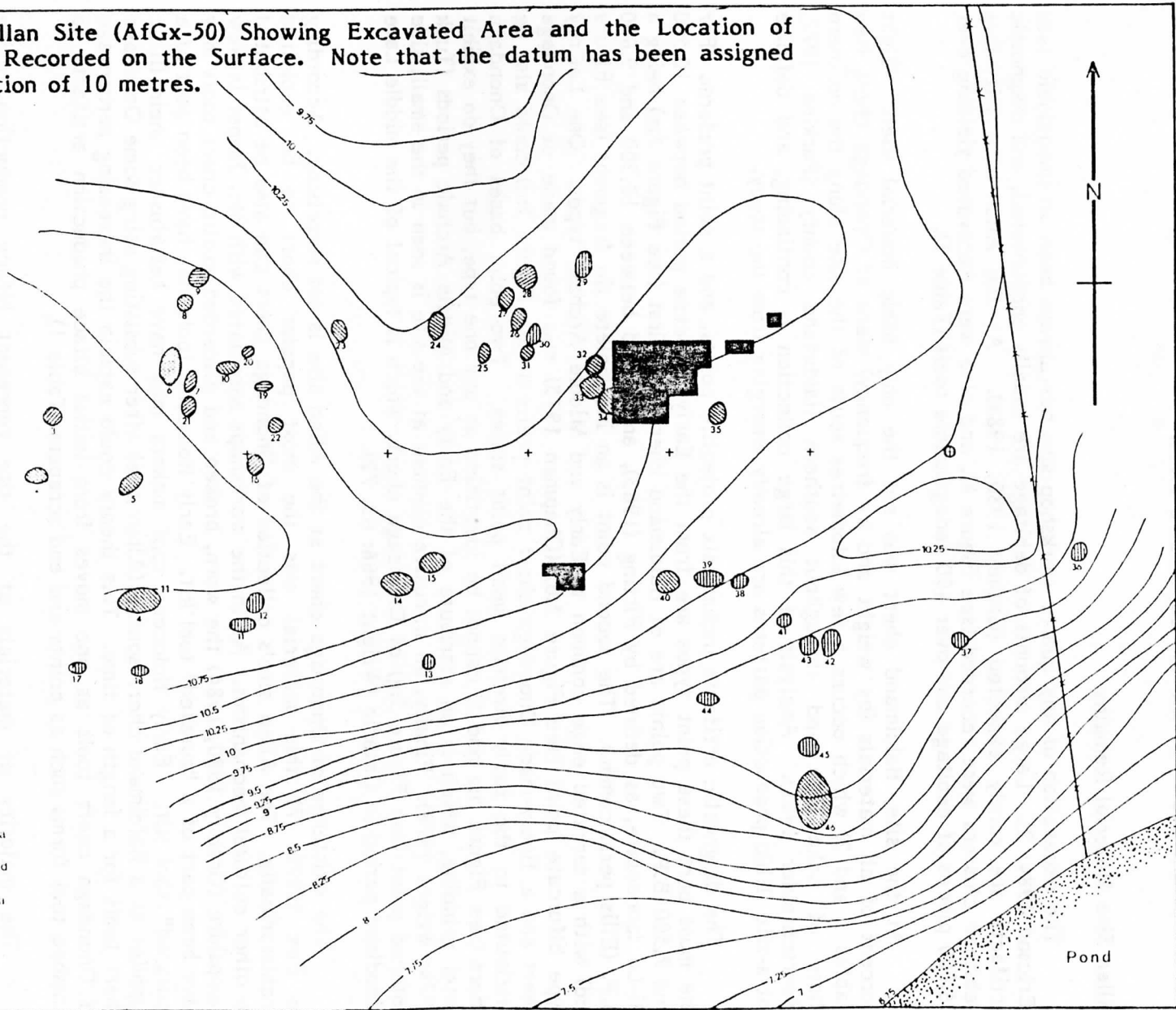
Figure 4: The Allan Site (AfGx-50) Showing Excavated Area and the Location of Debitage Clusters Recorded on the Surface. Note that the datum has been assigned an arbitrary elevation of 10 metres.

1985

Contour: .25 metres

Scale:  10 metres

- KEY**
- ⊕ Fixed Datum
 - + Baseline Stakes
 - Fence
 -  Excavated Area
- Chert Clusters on the Surface:**
-  Haldimand > Onondaga
 -  Onondaga > Haldimand
 -  Haldimand = Onondaga
 -  Haldimand Only
 -  Onondaga Only



left intact and drawn at the ten centimetre level.

Allen Site Material Remains

The excavation of any quarry workshop site has always been an unenviable task (Ericson 1984: 2). Large amounts of debitage are usually encountered, and diagnostic artifacts are rarely expected (Gramly 1980, 1984). At the Allan site fifty-five debitage clusters were recorded (see Figure 4), and nine were excavated yielding over 36,000 pieces of debitage and over 400 recognizable tools (Table 1).

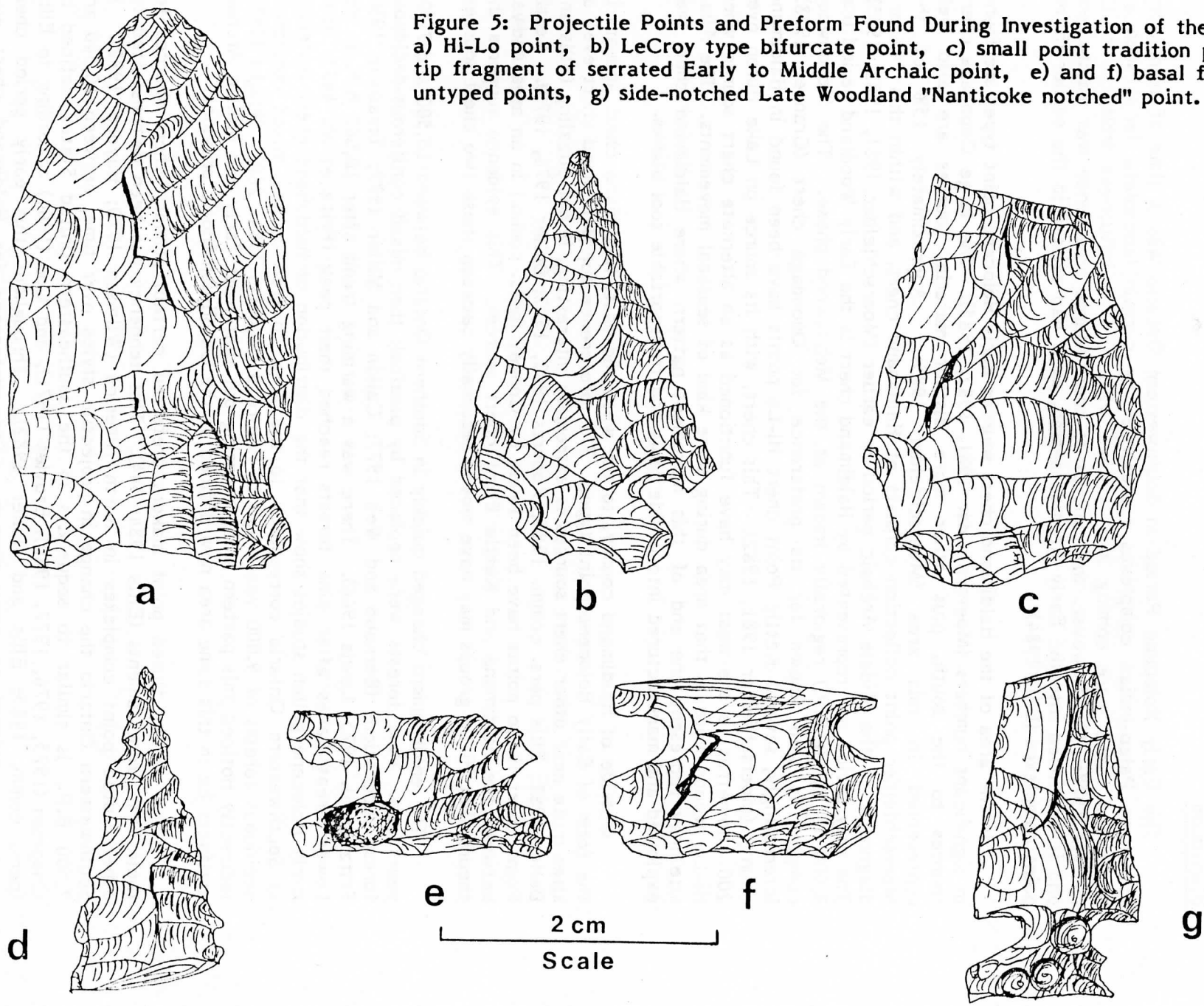
At the site, Haldimand chert was not the only lithic material used. Eight percent of all materials (by weight and by frequency) were of Onondaga chert (see Tables 1 and 2) which occurs a few kilometres south of the site along the northern shore of Lake Erie and throughout southern Haldimand county (Parkins 1977; Moerschfelder 1981). Analysis of this large collection is continuing, and definite intra-site lithic production patterns are already emerging from the study.

The diagnostic artifacts include six projectile points, and a point preform. For the most part these point types are from the Early Holocene period between 10,500 and 7,500 B.P. Two points are of Haldimand chert, the first (see Figure 5:a) being a Hi-Lo lanceolate, as defined by Fitting (1963), and dated between 10,200 and 9,600 B.P. (Ellis pers. comm.). The second point is an incomplete tip fragment (see Figure 5:d) with a serrated edge common to Early and Middle Archaic types. One LeCroy type bifurcate point (see Figure 5:b) (Chapman 1975) was found made of Onondaga chert and a finely-made Onondaga chert point preform (see Figure 5:c) could also be attributed to the Early Archaic small point styles. Two point bases of Onondaga chert (see Figure 5:e and f) cannot be identified as any one type, but they do exhibit basal grinding, which is an attribute of the Early and Middle Archaic periods (Tuck 1974; Wright 1978). Finally, an intrusive element at the site is seen in the small, side notched point (see Figure 5:g) of Onondaga chert, which is typical of the middle Late Woodland period in Ontario (Wright 1966: 63, 72).

The existence of Onondaga chert at the Allan site is not surprising. According to Fox (1978: 7) this material was the most popular chert to be exploited prehistorically. The Allan site's collection of Onondaga chert can also be attributed to other cultural mechanisms. As in the workshops associated with Mt. Jasper in New Hampshire (Gramly 1980, 1984) the worn, broken and discarded exotic chert tools may have been part of a "curated" tool kit. Early Holocene tools may have been part of a "curated" tool kit. Early Holocene tool makers may have refurbished their lithic supplies at a Haldimand chert source (Allan site) after subsisting using some Onondaga chert tools for a length of time. This theory could explain the increasing percentage of Onondaga chert tools as one moves from initial biface production artifacts to finished tool forms such as points and end scrapers (Table 1).

The majority of materials at the site represent biface production, using Haldimand, and occasional Onondaga chert. The remainder of the tools are largely unifacial, and may be related to weapon preparation and/or hafting processes (Hatch and Miller 1985:226). However, the site probably also functioned as a multi-purpose camp where both hunting and tool making activities occurred over a number of occupations.

Figure 5: Projectile Points and Preform Found During Investigation of the Allan Site; a) Hi-Lo point, b) LeCroy type bifurcate point, c) small point tradition preform, d) tip fragment of serrated Early to Middle Archaic point, e) and f) basal fragments of untyped points, g) side-notched Late Woodland "Nanticoke notched" point.



The Early Holocene Period in Southwestern Ontario was a time of transition. The Late Paleo-Indian complexes represented by certain lanceolate forms such as Hi-Lo and Plano were coming into contact with Archaic influences from the south (Wright 1978: 74). However, the concept of chert source preference was maintained, and it continued into the Early Archaic period, as it had existed in the earlier fluted point complexes (Ellis 1984).

In the area of the Haldimand chert sources Early Holocene point types are found in significant numbers (Moerschfelder 1981, 1982, 1985). The large Onondaga chert sources to the south, plus other more distant material sources are also well represented in this area (Moerschfelder 1985). Approximately 15% of the Moerschfelder point collection consists of Haldimand chert, and within this 74% are diagnostic of the Middle Archaic period or earlier (Moerschfelder 1981, 1982, 1985). The only period not represented by Haldimand chert is the Early Woodland period (ca. 3,000 to 2,500 B.P.) regionally known as the Meadowood phase. The Meadowood complex is well known for its preference for Onondaga chert (Granger 1978). Interestingly, several Kettle Point chert Hi-Lo points have been found in Haldimand county (Moerschfelder 1981, 1982). This chert, with its source on Lake Huron over 200 kilometres to the west may have functioned as an alternate chert source when Hi-Lo groups were in that area during some kind of seasonal movements. The Allan site may represent one end of this movement pattern where Haldimand chert was exploited and manufactured into usable tools and transportable tool blanks.

Outside of Haldimand county, to the west and east, Haldimand chert appears in the form of Early Holocene point types. This preference for Haldimand chert even at sites quite near other chert sources is extremely interesting, if not puzzling (Ellis and Deller 1982; Ellis pers. comm. 1985; Roberts 1980, 1982; Deller 1976, 1979). Kettle Point chert Hi-Lo points have been found by Connoy (pers. comm.) in an area midway between the Haldimand and Kettle Point chert sources. This evidence supports the theory that Hi-Lo groups may have moved seasonally between these two chert sources.

The environment changed quickly in Southern Ontario between 10,500 and 7,500 years ago. Pine forests were replaced by pine/oak then mixed coniferous-deciduous forest successions (Bernabo and Web 1977; Calkin and Miller 1977; Terasmae 1980; Fritz et al. 1975; Lewis 1966). There was a warming trend after 10,000 B.P. in the Lower Great Lakes after pine forests reached their peak (Fritz et al. 1975: 269). Early Holocene pollen studies show that the distribution of Haldimand chert materials in Southwestern Ontario corresponds to the area covered by the mixed coniferous deciduous forests of 9,000 years ago in Figure 3 (Roberts 1984: 260). Wright (1978) indirectly noticed this pattern when pointing out that most Early and Middle Archaic artifacts lie in this same area now defined as the Carolinian Biotic province.

The earlier fluted point makers preferred certain primary chert sources for their lithic requirements (Ellis 1984: 344). This tendency has been demonstrated for other fluted point complexes in North America (Wilmsen 1970; Hayden 1982). In Southwestern Ontario the change in projectile styles over time, between 10,500 and 7,500 B.P., is similar to sequences in the southeastern United States defined by Chapman (1975, 1976, 1977, 1980), Broyles (1971), and Coe (1964) according to Ellis, (pers. comm. 1985; Ellis and Deller 1982). Throughout this early period chert preference existed to some degree. The preference for Haldimand chert was, however, short-lived after 9,000 B.P. Other chert sources were soon exploited at similar rates, for example at the Nettling site 150 kilometres west of the Allan site

TABLE I: Distribution by Material Type of

Allan Site Lithic Assemblage.

Type	Lithic Material			Total
	Haldimand	Onondaga	Other	
Debitage	33,576	2,899	--	36,475
Cores	114	5	--	119
Tool Blanks	64	--	--	64
Bifaces	55	5	--	60
Large Unifaces	8	2	--	10
Utilized Flakes	13	4	--	17
Convex Scrapers	12	3	--	15
Spokeshaves	--	2	--	2
Blades	16	5	--	21
End Scrapers	8	6	--	14
Tri-Unifaces*	59	11	--	70
Perforators	17	7	--	24
Points, Preforms	2	5	--	7
Choppers	--	--	1	1
Hammerstones	--	--	11	11
Totals	33,944	2,954	12	36,910
(%)	(91.9%)	(8.0%)	(0.1%)	

* Triangular Unifaces

TABLE II: Distribution by Weight and Material

Type of Allan Site Chert Assemblage.

Type	Lithic Material		Total	(%)
	Haldimand	Onondaga		
Cores	7670.2 (gms)	278.8	7949	(13.5%)
Bifaces, Points, Blanks, Preforms	3731.6	97.8	3829.4	(6.5%)
Flake Tools	802.5	992.1	1794.6	(3.1%)
Debitage	42,024.9	3299.0	45,323.0	(76.9%)
Totals	54,229.2	4,667.7	58,896.9	(100%)
(%)	(92.0%)	(8.0%)		

Kirk corner notched points and related tools are made of Ohio cherts from across Lake Erie. At this time, circa 9,500 B.P. (Fox n.d.), Early Lake Erie existed at levels 10 to 15 metres lower than today's levels (Lewis 1966), therefore land bridges allowed the Ohio cherts to be imported with more ease across the Erie basin.

Conclusions

Haldimand chert, when found far from its sources in Southwestern Ontario can be demonstrated to be of an early date in the cultural chronology of the Northeast. Therefore, when identified properly, the material itself becomes diagnostic of certain time periods, or cultural complexes, which enables archaeologists to understand regional prehistory in a much better light. The existence of Haldimand chert on several Hi-Lo sites in Southwestern Ontario also helps confirm that the Hi-Lo stage is a transitional one between the Paleo-Indian and Early Archaic periods. This conclusion supports Ellis and Deller (1982) who state that Hi-Lo is a regional variant of Tuck's Dalton Horizon (Tuck 1974). Chert preference in the Early Paleo-Indian period has been indicated to have existed in Southern Ontario (Ellis 1984: 344).

Haldimand chert continued to be preferred into the following Early Archaic horizons, such as Big Sandy and Kirk (Tuck 1974), and the Bifurcate horizon defined by Chapman (1975). But, the Early Archaic period was one of rapid transitions, and changes in subsistence strategies and/or resource placement patterns may have led to the demise of chert source preferences. The ultimate reason for the preference for Haldimand chert during the Early Holocene can never be fully understood, but continued research will help solve this intriguing puzzle of Southern Ontario's early prehistory.

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References

Bernabo, J.C. and T. Webb III

1977 Changing Patterns in the Holocene Pollen Record of North Eastern North America: A Mapped Summary. *Quaternary Research* 8: 64-96.

- Blatt, H., G. Middleton and R. Murray
1980 *Origin of Sedimentary Rocks*. Second Edition. Prentice-Hall, Englewood Cliffs, New Jersey.
- Broyles, B.J.
1971 Second Preliminary Report: The St. Albans Site, Kanawha County, West Virginia, 1964-1968. Report of Archaeological Investigations, No. 3. West Virginia Geological and Economic Survey. Morgantown.
- Calkin, P.E. and K.E. Miller
1977 Late Quaternary Environment and Man in Western New York. *Annals of the New York Academy of Science* 288: 297-315. New York.
- Chapman, J.
1975 The Rose Island Site and the Cultural and Ecological Position of the Bifurcate Point Tradition in Eastern North America. National Park Service, Interagency Archaeological Services. Atlanta, Georgia.
1976 The Archaic Period in the Lower Little Tennessee River Valley: The Radiocarbon Dates. *Tennessee Archaeologist* 1: 1-12.
1977 Archaic Period Research in the Lower Little Tennessee River Valley. University of Tennessee, Department of Anthropology, Report of Investigations No. 18. Knoxville.
1980 The Early and Middle Archaic Periods: A Perspective from Eastern Tennessee. In: *Proceedings of the Conference on Northeastern Archaeology*, edited by J.A. Moore. University of Massachusetts, Department of Anthropology, Research Report No. 19: 123-132. Amherst.
- Chapman, L.J. and D.F. Putnam
1973 *The Physiography of Southern Ontario*. Second Edition. University of Toronto Press, Toronto.
- Coe, J.C.
1964 *The Formative Cultures of the Carolina Piedmont*. Transactions of the American Philosophical Society New Series 54(5). Philadelphia.
- Deller, D.B.
1976 Paleo-Indian Locations on Late Pleistocene Shorelines, Middlesex County, Ontario. *Ontario Archaeology* 26: 3-19. Peterborough.
1979 Paleo-Indian Reconnaissance in the Counties of Lambton and Middlesex, Ontario. *Ontario Archaeology* 32: 3-25. Peterborough.
- Ellis, C.J.
1984 Paleo-Indian Lithic Technological Structure and Organization in the Lower Great Lakes: A First Approximation. Unpublished Ph.D. Thesis, Dept. of Archaeology, Simon Fraser University, Burnaby, B.C.
- Ellis, C.J. and D.B. Deller
1982 Hi-Lo Materials from Southwestern Ontario. *Ontario Archaeology* 38: 3-22. Peterborough.

- Ericson, J.E.
1984 Toward the Analysis of Lithic Production Systems. In: **Prehistoric Quarries and Lithic Production**, edited by J.E. Ericson and B.A. Purdy, pp. 1-9. Cambridge University Press.
- Fitting, J.E.
1963 The Hi-Lo Site: A Late Paleo-Indian Site in Western Michigan. **Wisconsin Archaeologist** 44(2): 87-96. Lake Mills.
1968 Environmental Potential and the Post Glacial Readaptation in Eastern North America. **American Antiquity** 33(4): 441-445. Salt Lake.
- Fox, W.A.
1978 Southern Ontario Cherts. Paper presented at the 11th Annual Meeting of the Canadian Archaeological Association, Quebec City, P.Q.
1980 The Kirk Cluster in Southwestern Ontario. Paper presented at the 1980 Ontario Archaeological Society Annual Symposium, London, Ontario.
- Freeman, E.B. (editor)
1978 Geological Highway Map, Southern Ontario. Ontario Geological Survey Map 2418. Toronto.
- Fritz, P., T.W. Anderson and C.F.M. Lewis
1975 Late Quaternary Climatic Trends and History of Lake Erie from Stable Isotope Studies. **Science** 190: 267-269.
- Gramly, R.M.
1980 Raw Material Source Areas and "Curated" Tool Assemblages. **American Antiquity** 45: 823-833. Salt Lake.
1984 Mount Jasper: A Direct-Access Lithic Source Area in the White Mountains of New Hampshire. In: **Prehistoric Quarries and Lithic Production**, edited by J.E. Ericson and B.A. Purdy, pp. 11-12. Cambridge University Press.
- Granger, J.E.
1978 Meadowood Phase Settlement Pattern in the Niagara Frontier Region of Western New York State. **University of Michigan, Museum of Anthropology, Anthropological Papers** No. 65. Ann Arbor.
- Hatch, J.W. and P.E. Miller
1985 Procurement, Tool Production and Sourcing Research at the Vera Cruz Jasper Quarry in Pennsylvania. **Journal of Field Archaeology** 12(2): 219-230.
- Hayden, B.
1982 Interaction Parameters and the Demise of Paleo-Indian Craftsmanship. **Plains Anthropologist** 27(96): 109-123. Lincoln.
- Lewis, C.F.M.
1966 Sedimentation Studies of Unconsolidated Deposits in the Lake Erie Basin. Unpublished PhD thesis, University of Toronto.

Luedtke, B.E.

- 1979 The Identification of Sources of Chert Artifacts. *American Antiquity* 44(4): 744-757. Salt Lake.

Meltzer, D.J.

- 1985 On Stone Procurement and Settlement Mobility in Eastern Fluted Point Types. *North American Archaeologist* 6(1): 1-24.

Moerschfelder, F.

- 1981 An Archaeological Survey of the Former Townships of Rainham and South Cayuga, Regional Municipality of Haldimand-Norfolk, Province of Ontario, 1981. Ms. on file at the Archaeology Office, Ministry of Citizenship and Culture, London.
- 1982 Report of Archaeological License Number 82-24: A Study of Prehistoric Sites in Haldimand County, 1982. Ms on file at the Archaeology Office, Ministry of Citizenship and Culture, London.
- 1985 Locating the Source of Haldimand Cherts and Related Workshop Sites Along Roger's Creek: An Ongoing Survey in Haldimand County. Ms. on file at the Archaeology Office, Ministry of Citizenship and Culture, London.

Parkins, W.

- 1977 Onondaga Chert: Geological and Palynological Studies as Applied to Archaeology. Unpublished MSc thesis, Department of Geological Sciences, Brock University, St. Catharines, Ontario.

Ritchie, W.A.

- 1965 *The Archaeology of New York State*. Natural History Press, Garden City.
- 1971 The Archaic in New York. *New York State Archaeological Association Bulletin* 52: 2-12.

Roberts, A.

- 1980 A Geographic Approach to Southern Ontario Archaic. *Archaeology of Eastern North America* 8: 28-45. Ann Arbor.
- 1982 Preceramic Occupations Along the North Shore of Lake Ontario. Unpublished Phd thesis, Dept. of Geography, York University, Toronto.
- 1984 Paleo-Indian on the North Shore of Lake Ontario. *Archaeology of Eastern North America* 12: 248-265. Ann Arbor.

Roosa, W.B. and D.B. Deller

- 1982 The Parkhill Complex and Eastern Great Lakes Paleo-Indian. *Ontario Archaeology* 37: 3-15. Peterborough.

Stewart, A.

- 1984 The Zander Site: Paleo-Indian Occupation of the Southern Holland Marsh Region of Ontario. *Ontario Archaeology* 41: 45-79. Peterborough.

- Storck, P.L.
1984 Research into the Paleo-Indian Occupation of Ontario: A Review. *Ontario Archaeology* 41: 3-28. Peterborough.
- Stothers, D.M.
1977 The Princess Point Complex. *National Museum of Man, Mercury Series, Archaeological Survey of Canada Paper No. 58*. Ottawa.
- Telford, P.G. and G.A. Tarrant
1975 *Paleozoic Geology of the Dunnville Area, Southern Ontario*. Ontario Division of Mines, Preliminary Map P. 988, Geological Series, Scale 1:50,000. Geology 1974. Toronto
- Terasmae, J.
1980 Some Problems of Late Wisconsin History and Geochronology in Southeastern Ontario. *Canadian Journal of Earth Sciences* 17: 361-381.
- Tuck, J.A.
1974 Early Archaic Horizons in Eastern North America. *Archaeology of Eastern North America* 2(1): 72-80. Ann Arbor.
- Voss, J.E.
1977 The Barnes Site: Functional and Stylistic Variability in a Small Paleo-Indian Assemblage. *Midcontinental Journal of Archaeology* 2: 253-305. Kent.
- Wilmsen, E.N.
1970 Lithic Analysis and Cultural Inference: A Paleo-Indian Case. *Anthropological Papers of the University of Arizona* No. 16.
- Wright, J.V.
1966 The Ontario Iroquois Tradition. *National Museum of Canada, Bulletin* 210. Ottawa.
1978 The Implications of Probable Early and Middle Archaic Projectile Points from Southern Ontario. *Canadian Journal of Archaeology* 2: 59-77. Ottawa.